

What is claimed is:

1. An image forming apparatus comprising:

an image carrier structured to carry an electrostatic latent image on its surface;

a liquid developer carrier which transports liquid developer toward a development position facing said image carrier while carrying said liquid developer on its surface, said liquid developer with charged toner dispersed in a carrier liquid; and

image forming means which applies a predetermined developing bias to said liquid developer carrier for causing said toner in said liquid developer carried on said liquid developer carrier to adhere to said image carrier, thereby developing said electrostatic latent image with said toner into a toner image,

wherein said image forming means forms a normal toner image under an image forming condition in which an adhesion amount of toner to said image carrier is substantially saturated relative to an increase of contrast potential.

2. An image forming apparatus according to Claim 1, wherein said image forming condition is a high-density image forming condition in which, in forming a solid image by causing said toner to adhere to said image carrier, a density of said solid image is substantially saturated relative to the increase of contrast potential.

3. An image forming apparatus according to Claim 1, wherein said image forming condition is a low-density image forming condition in which, in forming a low-density image including a fine line or discrete dots by causing said toner to adhere to said image carrier, a density of said low-density image is substantially saturated relative to the increase of contrast potential.

4. An image forming apparatus according to Claim 1, wherein said image forming condition is an intermediate-density image forming condition in which, in forming an intermediate-density image including a hollow fine line or hollow discrete dots by causing said toner to adhere to said image carrier, a density of said intermediate-density image is substantially saturated relative to the increase of contrast potential.

5. An image forming apparatus according to Claim 1, wherein said image forming condition satisfies at least 2 of the following image forming conditions, said following image forming conditions being a high-density image forming condition, an intermediate-density image forming condition and a low-density image forming condition:

said high-density image forming condition is a condition in which, in forming a solid image by causing said toner to adhere to said image carrier, a density of said solid image is substantially saturated relative to the increase in contrast potential;

said intermediate-density image forming condition is a condition in

which, in forming an intermediate-density image including a hollow fine line or hollow discrete dots by causing said toner to adhere to said image carrier, a density of said intermediate-density image is substantially saturated relative to the increase in contrast potential; and

said low-density image forming condition is a condition in which, in forming a low-density image including a fine line or discrete dots by causing said toner to adhere to said image carrier, a density of said low-density image is substantially saturated relative to the increase in contrast potential.

6. An image forming apparatus according to Claim 1, wherein said liquid developer has a γ -saturation characteristic in which an adhesion amount of toner to said image carrier is substantially saturated relative to the increase in contrast potential.

7. An image forming apparatus according to Claim 6, wherein a toner density in said liquid developer is in the range from about 5wt% to about 40wt%.

8. An image forming apparatus according to Claim 1, further comprising storage means for storing said image forming condition, wherein said image forming means forms said normal toner image based on said image forming condition stored in said storage means.

9. An image forming method, wherein a predetermined developing bias is applied to a liquid developer carrier carrying liquid developer with charged toner dispersed in a carrier liquid, thereby causing said toner in said liquid developer on said liquid developer carrier to adhere to an image carrier, whereby an electrostatic latent image on said image carrier is developed with said toner into a toner image, said method further comprising the steps of:

determining an image forming condition in which an adhesion amount of toner to said image carrier is substantially saturated relative to an increase in contrast potential; and

forming a normal toner image under said image forming condition thus determined.

10. An image forming apparatus comprising:

an image carrier structured to carry an electrostatic latent image on its surface;

a liquid developer carrier which transports liquid developer toward a development position facing said image carrier while carrying said liquid developer on its surface, said liquid developer with charged toner dispersed in a carrier liquid; and

image forming means which applies a predetermined developing bias to said liquid developer carrier for causing said toner in said liquid developer on said liquid developer carrier to adhere to said image carrier, thereby developing said electrostatic latent image with said toner into a

toner image; and

density detection means for detecting a density of said toner image formed as a patch image by said image forming means,

wherein said image forming means forms said patch image under an image forming condition in which an adhesion amount of toner to said image carrier is substantially saturated relative to an increase of contrast potential, and

wherein a toner density in said liquid developer is determined based on said density of said patch image detected by said density detection means.

11. An image forming apparatus according to Claim 10, wherein said toner density in said liquid developer is adjusted based on said density of said patch image.

12. An image forming apparatus according to Claim 11, further comprising a vessel for storing said liquid developer,

wherein said toner density in said liquid developer stored in said vessel is adjusted based on said density of said patch image, and

wherein said liquid developer carrier transports said liquid developer thus adjusted toward said development position.

13. An image forming apparatus according to Claim 10, wherein an image forming condition for forming a normal toner image is adjusted

based on said density of said patch image.

14. An image forming apparatus according to Claim 10, further comprising informing means for giving a message when said toner density in said liquid developer is determined to fall outside a predetermined range, said message indicating said toner density being deviated from said range.

15. An image forming apparatus according to Claim 10, wherein said density detection means detects a density of said patch image formed on said image carrier.

16. An image forming apparatus according to Claim 10, further comprising transferring means for transferring said toner image formed on said image carrier onto a transfer medium,

wherein said density detection means detects a density of said patch image transferred from said image carrier to said transfer medium.

17. An image forming apparatus according to Claim 10, wherein a plurality of patch images are formed by said image forming means at varied contrast potentials, and

wherein said image forming condition in which an adhesion amount of toner to said image carrier is substantially saturated relative to the increase in contrast potential is determined based on the densities of said plurality of patch images detected by said density detection means.

18. An image forming apparatus according to Claim 10, further comprising storage means for storing said image forming condition in which an adhesion amount of toner to said image carrier being substantially saturated relative to the increase in contrast potential,

wherein said image forming means forms said patch image under said image forming condition stored in said storage means.

19. An image forming method, wherein a predetermined developing bias is applied to a liquid developer carrier carrying thereon liquid developer with charged toner dispersed in a carrier liquid, thereby causing said toner in said liquid developer on said liquid developer carrier to adhere to an image carrier, whereby an electrostatic latent image on said image carrier is developed with said toner into a toner image, said method further comprising the steps of:

forming a toner image as a patch image under an image forming condition in which an adhesion amount of toner to said image carrier is substantially saturated relative to an increase in contrast potential;

detecting a density of said patch image; and

determining a toner density in said liquid developer based on a detected density of said patch image.

20. An image forming apparatus comprising:

an image carrier structured to carry an electrostatic latent image on

its surface;

a liquid developer carrier which transports liquid developer toward a development position facing said image carrier while carrying said liquid developer on its surface, said liquid developer with charged toner dispersed in a carrier liquid;

image forming means which applies a predetermined developing bias to said liquid developer carrier for causing said toner in said liquid developer on said liquid developer carrier to adhere to said image carrier, thereby developing said electrostatic latent image with said toner into a toner image; and

density detection means for detecting a density of a toner image formed as a patch image by said image forming means,

wherein said image forming means forms said patch image under an image forming condition in which not less than 90% of said toner in said liquid developer at said development position is adhered to said image carrier and

wherein a toner density in said liquid developer is determined based on said density of said patch image detected by said density detection means.

21. An image forming apparatus according to Claim 20, wherein said toner density in said liquid developer is adjusted based on said density of said patch image.

22. An image forming apparatus according to Claim 21, further comprising a vessel for storing said liquid developer,

wherein said toner density in said liquid developer stored in said vessel is adjusted based on said density of said patch image, and

wherein said liquid developer carrier transports said liquid developer thus adjusted toward said development position.

23. An image forming apparatus according to Claim 20, wherein an image forming condition for forming a normal toner image is adjusted based on said density of said patch image.

24. An image forming apparatus according to Claim 20, further comprising informing means for giving a message when said toner density in said liquid developer is determined to fall outside a predetermined range, said message indicating said toner density being deviated from said range.

25. An image forming apparatus according to Claim 20, wherein said density detection means detects a density of said patch image formed on said image carrier.

26. An image forming apparatus according to Claim 20, further comprising transferring means for transferring said toner image formed on said image carrier onto a transfer medium,

wherein said density detection means detects a density of said

patch image transferred from said image carrier to said transfer medium.

27. An image forming apparatus according to Claim 20, further comprising storage means for storing said image forming condition in which not less than 90% of said toner in said liquid developer at said development position is adhered to said image carrier,

wherein said image forming means forms said patch image under said image forming condition stored in said storage means.

28. An image forming method, wherein a predetermined developing bias is applied to a liquid developer carrier which transports liquid developer with charged toner dispersed in a carrier liquid toward a development position facing an image carrier, thereby causing said toner in said liquid developer on said liquid developer carrier to adhere to said image carrier, whereby an electrostatic latent image on said image carrier is developed with said toner into a toner image, said method further comprising the steps of:

forming a toner image as a patch image under an image forming condition in which not less than 90% of said toner in said liquid developer at said development position is adhered to said image carrier;

detecting a density of said patch image; and

determining a toner density in said liquid developer based on a detected density of said patch image.